Agricultural sector labor migration: case study in Patanas Villages

Ashari[1,*], *Tri Bastuti* Purwantini[2], and *Rika Reviza* Rachmawati[1]

[1] Research Center for Behavioral and Circular Economics, National Research and Innovation Agency, Jakarta, Indonesia

[2] Research Center for Social Welfare, Village, and Connectivity, National Research and Innovation Agency, Jakarta, Indonesia

Abstract. Population migration is a common phenomenon in rural communities. It shows an effort to find opportunities to get a better job outside the village. The migration process also occurs in the village, the research site of the National Farmer Panel (Patanas). This paper aims to (1) look at the magnitude and type of migration in the Patanas village and (2) identify the push and pull factors of migration. The research method used is descriptive. The results showed that among the three types of migration, the most dominant types were commuters, followed by circular and permanent. The push factors of migration in Patanas villages are dominated by: (1) limited employment opportunities in rural areas, (2) no or narrow land tenure, (3) low agricultural wages and seasonal nature, and (4) less prestigious. While there are three main pull factors in migrant destinations: (1) it is easy to find a job or try at the destination, (2) wages in the destination area are higher than in origin, and (3) wages are earned routinely. To downsize the migration rate, the government must provide better infrastructure in the village, a prerequisite for economic development in rural areas.

1 Introduction

The agricultural sector will always play an essential role because it produces food, a basic human need. Several challenges are experienced in agricultural development, including providing agricultural labor. Currently, there is a tendency to decrease the interest (especially in youth) in working in agriculture and the emergence of 'aging farmers' in the structure of the agricultural workforce [1]. Various factors have caused the low interest of young to work in the agricultural sector, such as less prestigious, high risk, instability of income, narrow land tenure; agricultural industry in less developed villages, no special incentives for young farmers; and the changing perspective of youth in the postmodern era [2]. This condition potentially encourages youth to migrate and work in non-agricultural sectors. As a result, the agricultural sector could experience a labor shortage if this phenomenon is not adequately anticipated. A research result mentioned that the agricultural

[*] Corresponding author: ashari.sp@gmail.com

employment share in Patanas villages decreased from 2007 to 2016 and vice versa for non-agriculture [3].

Migration is the movement of people across the borders of the origin to the destination area to settle. Migration is one of the three essential factors influencing population growth besides births and deaths. The migration issue is significantly related to the population's unequal distribution and the push and pull factors for people to migrate [4]. In the context of migration from rural to urban areas, population migration shows the activities and efforts of rural communities to seek job opportunities that are expected to be better than those available in the village.

Migration consists of two forms, i.e., permanent, and non-permanent. Permanent migration refers to the movement of people from the origin area to another area and staying for more than six months at the destination. Meanwhile, non-permanent migration is without the intention of settling in the destination area [5]. In addition, BPS [6] mentioned that labor mobility in Indonesia consists of two types: spatial labor and non-spatial labor mobility. There are also two spatially types of labor mobility, namely permanent and non-permanent. Meanwhile, non-spatial labor mobility is moving from one job to another according to sector and job status.

In terms of a time dimension, migration could be divided into three groups: (1) commutation, migration is carried out by way of commuting from home to work (without staying overnight), (2) circular, the migration that is carried out by staying less than six months, and (3) permanent, a migration which is carried out by staying at the migration place for more than six months [7]. Meanwhile, working as a source of economic livelihood is a driving factor for migration if no jobs are available in the area of origin [8]. On the other hand, work becomes a pull factor if jobs with higher wages are available in the destination area. Migration occurs because there is an industrial sector with higher wages in an urban area than in a rural, which is identical to the agricultural industry. Thus, the economy becomes one aspect that can underlie migration. The increase in the number of migrant workers will cause the diversification of the source of rural households' livelihoods and theoretically reduce the dependence of rural households on the original region [9].

Based on the discussion aforementioned, migration occurred due to limited employment opportunities in rural areas. In the case of irrigated agroecosystems, [1] reported that farmers had much free time after planting rice. While waiting for harvest time, many workers in rural areas migrated to cities. Migration in the agricultural sector is interesting to study, not only in irrigated land agroecosystems but also in other agroecosystems. The Indonesian Center for Agricultural Socio-Economic and Policy Studies (ICASEPS) has conducted Patanas research since 2007 in several villages with different agroecosystems. The current illustration of migration in Patanas villages is interesting to reveal. Therefore, this paper has two objectives, namely to (1) look at the magnitude and type of migration in the Patanas villages and (2) identify the push and pull factors of migration.

2 Research methods

The survey was carried out in seven provinces, i.e., Central Java, East Java, West Java, North Sumatera, Jambi, South Kalimantan, and South Sulawesi. The total number of sample villages in 20 villages. The study's location was chosen based on different agroecosystems. The category of an agroecosystem is based on the type of land and the dominant commodity planted. The sample villages are grouped into four ecosystems, namely (1) irrigated land with the primary commodity of paddy (8 villages); (2) rain-fed land with secondary crop/soybean (2 villages); (3) swamp land (*lebak*) with paddy commodity (1 village), (4) dry land with the main commodity of vegetables (2 villages); (5) dry land with the main commodity of estate crops (6 villages), dry land with the dairy farm

(1 village). A survey was conducted in 2021. The enumeration process was carried out using a new means, i.e., an Android-based Tab/handphone called CAPI (Computer Assisted Personal Interviewing). This method replaces the paper-based form as utilized in previous surveys.

The sample in this study was rural households chosen using the stratified random sampling approach based on the household sampling frame utilizing two strata: (1) land holding and (2) main source of family income. Each village has around 40 sample households, which include (a) farmer (owner/tenant land), (b) nonfarm households, (c) farm laborer households, and (d) nonagricultural employees, professionals, and others. It is supposed that the sample households will be able to represent the entire rural population's livelihoods due to the four diverse segments of the household sample. The total of respondents is 800 households. The survey results were processed and descriptively examined.

3 Result and discussion

3.1 Magnitude and type of migration

Table 1. The number of migrating families and the percentage of migration types based on agroecosystems and Patanas villages, 2021.

Agroecosystem/ Village	Number of Migrations (people)	The Percentage of Migration (%)		
		Commuters	Circular	Permanent
Irrigated land-rice	**130**	**59.23**	**20.00**	**20.77**
Carawali	14	71.43	28.57	-
Salu Jambu	15	40.00	6.67	53.33
Lidah Tanah	14	78.57	14.29	7.14
Mojorejo	25	76.00	24.00	-
Padomasan	22	50.00	36.36	13.64
Sindangsari	16	68.75	18.75	12.50
Tugu	9	11.11	-	88.89
Rengaspendawa	15	53.33	13.33	33.33
Dryland-secondary crop	**11**	**63.64**	**9.09**	**27.27**
Bumiayu	11	63.64	9.09	27.27
Dryland-Plantation	**77**	**35.06**	**41.56**	**23.38**
Bakti	18	22.22	50.00	27.78
Kebonan	15	53.33	40.00	6.67
Matra Manunggal	15	40.00	46.67	13.33
Penerokan	19	31.58	36.84	31.58
Rejosari	10	30.00	30.00	40.00
Rainfed-Rice	**30**	**63.33**	**16.67**	**20.00**
Panunggalan	23	56.52	17.39	26.09
Tancung	7	85.71	14.29	-
Swamp/lebak- Rice	**8**	**87.50**	**12.50**	**-**
Handil Birayang Atas	8	87.50	12.50	-
Dryland-Vegetable	**13**	**38.46**	**38.46**	**23.08**
Cimahi	7	-	57.14	42.86
Ngantru	6	83.33	16.67	-
Dryland-Dairy Farm	**11**	**90.91**	**9.09**	**-**
Pandesari	11	90.91	9.09	-
Total	**280**	**54.29**	**25.36**	**20.36**

The labor forces aim to migrate to get employment opportunities that are better than those available in their village. There are several types of migration by household members

in the Patanas sites, namely commuters, circular and permanent (Table 1). Based on the type of migration, the data showed that the most prominent migrations in d the localities of Patanas were commuters (54.29%), followed by circular (25.36%) and permanent (20.36%) migrations. For example, many migrants work outside the village and make round trips to their places of work. Some villages regarded with high levels of migration are the village of Mojorejo, the District of Sragen (25 persons), the village of Panunggalan, Grobogan (23 persons), and the village of Padomasan, Jember (22 persons). The huge share of commuters who had previously engaged in job activities demonstrates that economic considerations, particularly increased income, remain the primary motivator for commuting [10].

In general, the relatively high migration occurred in the agroecosystem of irrigated and rainfed land with paddy as the primary commodity. Migration from rural to urban areas is inequitable because, in some cases, farming activities in the village were not quite profitable. Farming encounters risks such as calamities (drought, flood, pest attack). In rainfed areas, for instance, farmers depend solely on rainwater; after the rainy season, they have no economic activity that could sustain the villages [11]. Migration is a practical way out of poverty, even if villagers are only involved in informal jobs. Many farmers believe migration is the only way to sustain and break free from poverty [12].

3.2. Migration location and type of work of migrant

Table 2. The Percentage of migration locations based on agroecosystems and Patanas villages, 2021.

Agroecosystems / Villages	Migration location			
	Outside the village/sub-district	**Outside the district/Prov**	**Outside the country**	**Total**
Irrigated land-rice	**43.85**	**49.23**	**6.92**	**100**
Carawali	78.57	21.43	-	100
Salu Jambu	13.33	80.00	6.67	100
Lidah Tanah	50.00	50.00	-	100
Mojorejo	60.00	36.00	4.00	100
Padomasan	18.18	81.82	-	100
Sindangsari	62.50	31.25	6.25	100
Tugu	11.11	22.22	66.67	100
Rengaspendawa	46.67	53.33	-	100
Dryland-secondary crop	**54.55**	**36.36**	**9.09**	**100**
Bumiayu	54.55	36.36	9.09	100
Dryland-Plantation	**48.05**	**45.45**	**6.49**	**100**
Bakti	33.33	55.56	11.11	100
Kebonan	66.67	33.33	-	100
Matra Manunggal	66.67	33.33	-	100
Penerokan	31.58	68.42	-	100
Rejosari	50.00	20.00	30.00	100
Rainfed- Rice	**56.67**	**43.33**	**-**	**100**
Panunggalan	47.83	52.17	-	100
Tancung	85.71	14.29	-	100
Swamp/lebak- Rice	**37.50**	**62.50**	**-**	**100**
Handil Birayang Atas	37.50	62.50	-	100
Dryland-Vegetable	**30.77**	**61.54**	**7.69**	**100**
Cimahi	-	85.71	14.29	100
Ngantru	66.67	33.33	-	100
Dryland-Dairy Farm	**90.91**	**9.09**	**-**	**100**
Pandesari	90.91	9.09	-	100
Total	**47.86**	**46.43**	**5.71**	**100**

Table 2 shows that migration destinations are predominantly outside villages (47.86%), followed by out-of-district migration (46.43%) and a small percentage of people going abroad (5.71%). Especially regarding migration abroad, considering the proportion of family members of respondents who work abroad, the village of Indramayu Regency, Tugu is the largest. The total number of family members migrating was 66.67% working outside the country, the remaining 22.22% out of the district or province, and 11.11% out of the village.

Table 3 presents information on the type of work performed by migrants at their destination. The majority of migrants work to be professionals (35%), services (25%), non-agricultural workers (23.21%), agricultural workers (10%) and farming (6.79%). The professional category includes those who work as teachers, health workers, civil servants, village servants, and others. Migration through agricultural labor is relatively low. However, a particular case occurred in the village of Tugu, Indramayu. Most of the migrants from the village (66.67%) were still working in agricultural enterprises, while the rest (33.33%) worked as non-agricultural workers. Several factors would attract households to non-farm employment, namely: (i) higher income generated in non-farm wage and self-employment; (ii) potentially lower risks; and (iii) more excellent social status attributed to non-farm activities [13].

Table 3. Types of work of Family Heads migrating from Patanas village, 2021.

Agroecosystems/Villages	Types of work					
	farmer	**Agric.worker**	**Non-agric. Workers**	**Service**	**Professional**	**Total**
Irrigated land-rice	**12.31**	**7.69**	**24.62**	**17.69**	**37.69**	**100**
Carawali	21.43	-	7.14	21.43	50.00	100
Salu Jambu	6.67	-	40.00	-	53.33	100
Lidah Tanah	-	7.14	21.43	28.57	42.86	100
Mojorejo	8.00	12.00	20.00	16.00	44.00	100
Padomasan	4.55	9.09	18.18	27.27	40.91	100
Sindangsari	12.50	12.50	31.25	25.00	18.75	100
Tugu	66.67	-	33.33	-	-	100
Rengaspendawa	6.67	13.33	33.33	13.33	33.33	100
Dryland-secondary crop	**9.09**	**-**	**18.18**	**18.18**	**54.55**	**100**
Bumiayu	9.09	-	18.18	18.18	54.55	100
Dryland-Plantation	**11.69**	**7.79**	**16.88**	**23.38**	**40.26**	**100**
Bakti	11.11	16.67	33.33	5.56	33.33	100
Kebonan	6.67	-	26.67	26.67	40.00	100
Matra Manunggal	13.33	6.67	-	33.33	46.67	100
Penerokan	5.26	5.26	10.53	21.05	57.89	100
Rejosari	30.00	10.00	10.00	40.00	10.00	100
Rainfed- Rice	**3.33**	**-**	**30.00**	**46.67**	**20.00**	**100**
Panunggalan	-	-	39.13	43.48	17.39	100
Tancung	14.29	-	-	57.14	28.57	100
Swamp/lebak- Rice	**-**	**-**	**25.00**	**62.50**	**12.50**	**100**
Handil Birayang Atas	-	-	25.00	62.50	12.50	100
Dryland-Vegetable	**7.69**	**7.69**	**30.77**	**23.08**	**30.77**	**100**
Cimahi	14.29	14.29	28.57	-	42.86	100
Ngantru	-	-	33.33	50.00	16.67	100
Dryland-dairy Farm	**-**	**18.18**	**27.27**	**45.45**	**9.09**	**100**
Pandesari	-	18.18	27.27	45.45	9.09	100
Total	**10.00**	**6.79**	**23.21**	**25.00**	**35.00**	**100**

3.3 The push and pull factor of migration

Everett Lee's theory, as cited by Faridi [14] mentioned that the migration process is influenced by driving (pushing) factors and pull factors. According to the theory, the decision to migrate can be categorized into factors related to the region of origin (push factor), and factors related to the destination area (pull factor). The push and pull factors are those that persuasively encourage the population to migrate or attract migrants [15].

Migration could be considered a rational decision to benefit from few job opportunities in the area of origin [16]. The push factors affecting migration can be categorized into economic, social, and political factors. But economic factors are predominant such as lack of employment, poverty, unemployment, and low wages/salaries. Meanwhile, Saptana et al.[17] found that factors driving migration in plantation dryland agroecosystem villages include low job opportunities, no land or narrow control of agricultural land, high skills, and lack of agricultural land activities (especially for seasonal migrants).

The pull factor of migration is the opposite of the push factor, involving various interesting aspects of the destination location. In line with push factors, the pull factors can also be categorized into economic, social, and political elements. According to Zoelle [18], economic factors such as expectations for better jobs, better housing, increased income and access to food, and a higher standard of living have attracted the migrants significantly to migrate. Because this study is related to rural/agricultural areas, discussing the push and pull factors for migration focuses more on economic and social aspects. Empirically the phenomenon of migration from rural agriculture tends to be driven by financial problems and relatively few social problems.

Table 4 presents the main factors affecting household members' migration according to the agroecosystem. The push factors of migration in Patanas village aggregately are dominated by the lack of employment opportunities in rural areas, reaching 45.7%. The second rank is landless or narrow land tenure (15.0%), followed by non-continuous wages/seasonally (7.3%), low agricultural salaries (6%), and employment on farms is less prestigious (2.3%). The other reason, which amounts to 8%, is found in many migrants who work in the formal sector.

It is reasonable that limited land tenure pushes migration because the land is the primary resource for farm activities. The landless villagers will work off-farm or non-farming. Meanwhile, job opportunities in such sectors are relatively limited in the village. Therefore, residents migrate to find work or try outside the town or the city. For citizens with higher education or special skills, it is most likely they leave the area of origin because the mastery of particular skills is less needed in the village. Eventually, they seek job opportunities outside to work in the sector following their educational qualifications and skills.

The phenomenon presented in Table 4 is closely related to the agricultural sector. The wages of agricultural workers are relatively low and are not continuous (seasonal). The reasoning that working in agriculture is less prestigious is found in the irrigated land agroecosystem (rice commodity), rainfed (secondary crops), and dryland (plantations). It shows that agriculture practice in the subsector is less attractive to young people. In contrast to dryland areas of vegetable bases and dairy farming, this reason disappeared. It implies that vegetable and dairy farms are considered to be not inferior. Many young people work in the two subsectors, especially in vegetable farming.

The pull factor refers to why villagers migrate and get job opportunities at their destination. Table 5 demonstrates the main reason (as a pull factor) for choosing the migration destination. Generally, it demonstrates that most reasons are economic and social motives such as high wages at the destination, routine wages, and easy to find a job/business at the destination. A study by Afrad et al. [19] in Bangladesh revealed that "better income opportunities" from other domestic and international sources rank first among the key factors of labor migration. Social factors include more prestigious work in the city or increasing the social status of migrants. Besides, migrants usually also have acquaintances/family at their destination.

Table 4. Percentage of migrants by reason (push factor) based on the agroecosystem area in Patanas village, 2021.

Agroecosystem	No/ narrow land	No Employment/ limited	skilled / higher edu.	Low wages in agric.	Seasonal wages	Low activities on the farm	Agric. not prestigious	Others
Irrigated land	11.91	50.29	14.71	6.25	9.33	2.86	2.49	2.16
Dryland-secondary crop	4.55	40.91	27.27	4.55	-	4.55	4.55	13.64
DL-vegetable	16.67	37.5	16.67	8.33	-	4.17	-	16.67
DL-plantation	17.41	41.54	8.71	5.97	6.22	1.49	2.24	16.42
DL-dairy farm	53.7	27.78	-	-	3.7	3.7	-	11.11
Total	15.04	45.75	13.09	5.95	7.27	2.64	2.29	7.97

Note: DL=dryland

Table 5. Percentage of migrants by reason (pull factor) based on the agroecosystem area in Patanas village, 2021.

Agroecosystem	Higher wage	Routine wage	Easy to find job/run business	More Prestigious	Have acquaintances/family	others
Irrigated land	24.36	20.13	29.79	6.73	7.75	11.23
Dryland-secondary crop	40.91	4.55	18.18	9.09	9.09	18.18
DL-vegetable	25.00	4.17	20.83	4.17	20.83	25.00
DL-plantation	21.64	30.60	20.90	4.48	4.48	17.91
DL-dairy farm	11.11	44.44	22.22	-	11.11	11.11
Total	23.89	22.48	26.00	5.82	7.68	14.14

Note: DL=dryland

Based on the percentage of responses (Table 5) shows four main attracting factors in migrant destinations, namely: (1) easy to find a job or try at the destination (26.0%), considering that the types of migrant workers in the destination are mainly in the informal sector. Such a sector is an unofficial business. Job seekers (such as self-employed) could create and generate jobs. In this sector, it is easy for migrants to enter because it does not require special education or skills. It also depends on the type of work. (2) wages in the destination area are higher than in the village's origin (23.9%). Migrants can usually set aside their income to be sent to families in the village; (3) wages are earned regularly (22.5%). The work or business is relatively continuous, so the income earned is also continuous. While in the village, it is still dependent on seasonal activities on the farm, and (4) having acquaintances or family at the destination location; this kinship can be used as a source of information or as a temporary residence/hitchhiking. The reason "other" were quite a lot answered by migrants (14.14%). It seems that if the job is in the formal sector, it is caused by the work placement in the destination area. For example, a migrant is an employee, both public and private, including teachers.

4 Conclusion and suggestions

4.1 Conclusion

The magnitude of migration is relatively higher on irrigated land and rainfed with rice as the primary commodity and also on dry land with plantation commodities. The type of migration in Patanas villages is dominated by commuters, followed by circular and permanent. The destination of most migrants is domestic, and only a few are international. Population pressure to migrate is generally due to economic factors, both in terms of the push aspect from the area of origin and the pull factor in the destination area. This phenomenon does not show differences among agroecosystem areas.

The main driving (push) factors of migration are limited job opportunities in rural areas and the lack of carrying capacity of the agricultural sector, both limited agricultural land resources and relatively low wage levels. This phenomenon implies that preventing the increase of people from migrating to cities requires expanding employment opportunities in villages. One of the efforts is to develop industries around villages based on local agricultural commodities.

The pull factors in the migration destination area include the relative ease of finding work or doing business, especially in the informal sector, and the element of acquaintances or family in the destination area also supporting the ease of finding employment or doing business in the destination place. Higher wages are a factor of interest for migrants; it is also supported by the continuity of wages/salaries received by migrants. This phenomenon impacts increasing the income of migrants so that they can send money to their families in the area of origin regularly.

4.2 Suggestions

The impact of migration on agricultural worker availability could be minimized by applying a proper action plan. The government could perform some actions as follows:
1. Formulating the strategies for rural and urban development is essential through allocating land rights, managing land use, land redistribution, creating regional development zones, and promoting economic diversification and competitiveness in rural areas by mobilizing investment and improving rural livelihoods.
2. At the policy level, significant attention should be given to improving farmers' access to education and establishing training centers to deal with skill barriers required to diversify livelihood activities.
3. Establishing mini vocational training centers directed toward the rural inhabitants is essential.

References

1. E. Gunawan, R. Setiani, and Saptana. J. Ekon. Pembang. **24**(2): 97-105. (2016)
2. S.H. Susilowati Fenomena penuaan petani dan berkurangnya tenaga kerja muda serta implikasinya bagi kebijakan pembangunan pertanian. Forum Penelit. Agro Ekon. **34**(1):

35-55 (2016)

3. S.H. Susilowati, Ashari, and T. Sudaryanto, E3S Web Conf. **232**, 1 (2021).

4. Mantra, I. B. Demografi Umum. (Yogyakarta, 2012)

5. S.H. Susilowati, B. Hutabarat, M. Rachmat, A. Purwoto, Sugiarto, Supriyati, Supadi, A.K. Zakaria, B. Winarso, H. Supriadi, T.B. Purwantini, R. Elizabeth, D. Hidayat, T. Nurasa, C. Muslim, M. Maulana., M. Iqbal, and R. Aldillah. *Indikator Pembangunan Pertanian dan Perdesaan: Karakteristik Sosial Ekonomi Petani dan Usahatani Padi* (Bogor, 2010)

6. Badan Pusat Statistik. *Profil Migran Hasil Survei Sosial Ekonomi Nasional 2019*. (Jakarta, 2019)

7. A.R.Nurmanaf, A. Djulin., Sugiarto, H. Supriadi, Supadi, N.K. Agustina, J.F. Sinuraya dan G.S. Budi. *Dinamika Sosial Ekonomi Rumah tangga dan Masyarakat Perdesaan: Analisa Profitabilitas Usahatani Dan Dinamika Harga dan Upah Pertanian*. (Bogor, 2004)

8. M.P Todaro, S.C Smith. *Economic Development* (11th ed). (New York,2012)

9. Z. Liu, J. Lan. World Dev. **70**, 147–161 (2015).

10. I. Hidayati. Jo-DEST. **1** (1): 14-21 (2021)

11. Nurlinah, Haryanto, Sunardi. *New development, old migration, and governance at two villages in Jeneponto, Indonesia.* (World Dev. Perspect, 2020).

12. Mukrimin. Southeast Asian Stud. **49**(2):349–368 (2019)

13. G.T Teame, T.M Woldu. J. Business Econ Manag. **4**(2):7–15 (2016)

14. R. Faridi. *Migration Theories: Lee's Push Pull Theory.* (2018)

15. V.R.Kumar. Int. J. Multidiscip. Educ. Res. **5**:149-156 (2021)

16. Urba´nski, Mariusz. Economies **10**:21 (2022).

17. Saptana, T.B.Purwantini. *Migrasi Tenaga Kerja pada Desa Lahan Kering Berbasis Perkebunan.* (IAARD PRESS, 2015)

18. D. Zoelle. *Push Factors: Immigration as a Consequence of Development Lending*. (Western Political Science Association, 2011)

19. M.D.S.I Afrad, A. Begum , M.D.E. Haque and N.S. Sarmin. Agriculturists **18**(1): 66-80 (2020).